

## WHAT IS CLAIMED IS:

1. A lens system comprising: in order from the front to the rear,

a first lens unit having a negative optical power, the first lens element consisting of a lens element whose rear surface has a concave shape;

an aperture stop; and

a second lens unit having a positive optical power, the second lens element comprising three lens elements,

wherein the following condition is satisfied:

$$0.7 < t_d / f < 1.3$$

where  $t_d$  denotes a length of the entire lens system, and  $f$  denotes a focal length of the entire lens system.

2. The lens system according to Claim 1, wherein

the following conditions are satisfied:

$$0.8 < |f_1| / f < 2.5$$

$$0.1 < d_2 / f < 0.8$$

where  $f_1$  denotes a focal length of the first lens unit, and  $d_2$  denotes an interval from a rearmost surface of the first lens unit to a foremost surface of the second lens unit.

3. The lens system according to Claim 1, wherein

the second lens unit comprises a lens element which satisfies the following condition:

$$n > 2.0$$

where  $n$  denotes a refractive index of the material of the lens element.

4. The lens system according to Claim 1, wherein

the second lens unit has one or more aspherical surfaces.

5. The lens system according to Claim 1, wherein

the lens system forms an image on a photosensitive surface of a photoelectric conversion element.

6. An image-taking apparatus comprising:

a lens system according to Claim 1 and

a photoelectric conversion element which receives light of an image formed by the lens system.

7. The image-taking apparatus according to Claim 6,

wherein the following condition is satisfied:

$$0.19 < (\tan \omega - \phi/2f) / (1 - \phi k/f) < 0.37$$

where  $\phi$  denotes an effective diameter of a rearmost surface of the second lens unit,  $\omega$  denotes a half-field angle of the entire lens system determined by an effective

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region of the photosensitive surface of the photoelectric conversion element, and  $ok$  denotes a distance from a rearmost surface of the entire lens system to a position of a rear principal point of the entire lens system.

8. The image-taking apparatus according to Claim 6, wherein the following condition is satisfied:

$$15^\circ < \theta < 25^\circ$$

where  $\theta$  denotes an angle formed by an off-axis principal ray which are directed from a rearmost surface of the second lens unit to a maximum image height on a photosensitive surface of the photoelectric conversion element and an on-axis principal ray.

9. A lens system comprising: in order from the front to the rear,

a first lens element having a meniscus shape whose concave surface is directed rearward and having a negative optical power;

an aperture stop;

a second lens element whose both lens surfaces have a convex shape;

a third lens element whose both lens surfaces have a concave shape; and

a fourth lens element whose rear surface has a convex

shape and having a positive optical power,

wherein lens elements included in the lens system are only the first to fourth lens elements.

10. The lens system according to Claim 9,

wherein the following conditions are satisfied:

$$0.8 < |f_{1a}|/f_a < 2.5$$

$$0.1 < d_{2a}/f_a < 0.8$$

where  $f_{1a}$  denotes a focal length of the first lens element,  $f_a$  denotes a focal length of the entire lens system, and  $d_{2a}$  denotes an interval from a rear surface of the first lens element to a front surface of the second lens element.

11. The lens system according to Claim 9,

wherein the following condition is satisfied:

$$n_a > 2.0$$

where  $n_a$  denotes a refractive index of a material of the second lens element.

12. The lens system according to Claim 9,

wherein the fourth lens element has one or more aspherical surfaces.

13. The lens system according to Claim 9,

wherein the lens system forms an image on a

photosensitive surface of a photoelectric conversion element.

14. An image-taking apparatus comprising:

a lens system according to Claim 9 and

a photoelectric conversion element which receives light of an image formed by the lens system.

15. The image-taking according to Claim 14,

wherein the following condition is satisfied:

$$0.19 < (\tan \omega_a - \phi_a / 2f) / (1 - o_{ka} / f) < 0.37$$

where  $\phi_a$  denotes an effective diameter of a rear surface of the fourth lens element,  $\omega_a$  denotes a half-field angle of the entire lens system determined by an effective region of a photosensitive surface of the photoelectric conversion element, and  $o_{ka}$  denotes a distance from a rearmost surface of the entire lens system to a position of a rear principal point of the entire lens system.

16. The image-taking apparatus according to Claim 14, wherein

the following condition is satisfied:

$$15^\circ < \theta_a < 25^\circ$$

where  $\theta_a$  denotes an angle formed by an off-axis principal ray which are directed from a rear surface of the fourth lens element to a maximum image height on a

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photosensitive surface of the photoelectric conversion element and an on-axis principal ray.

17. An image-taking apparatus comprising:

a lens system comprising:

a first lens element having a negative optical power, the first lens element consisting of a lens element whose surface has a concave shape;

an aperture stop;

a second lens element having a positive optical power, the second lens element comprising three lens elements; and

a photoelectric conversion element which receives light of an image formed by the lens system,

wherein the following condition is satisfied:

$$0.19 < (\tan \omega - \phi/2f) / (1 - ok/f) < 0.37$$

where  $\phi$  denotes an effective diameter of a rearmost surface of the second lens unit,  $\omega$  denotes a half-field angle of the entire lens system determined by an effective region of a photosensitive surface of the photoelectric conversion element, and  $ok$  denotes a distance from a rearmost surface of the entire lens system to a position of a rear principal point of the entire lens system.

18. An image-taking apparatus comprising:

a lens system comprising:

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a first lens unit having a negative optical power, the first lens element consisting of a lens element whose surface has a concave shape;

an aperture stop;

a second lens unit having a positive optical power, the second lens element comprising three lens elements; and

a photoelectric conversion element which receives light of an image formed by the lens system,

wherein the following condition is satisfied:

$$15^{\circ} < \theta < 25^{\circ}$$

where  $\theta$  denotes an angle formed by an off-axis principal ray which are directed from a rearmost surface of the second lens unit to a maximum image height on a photosensitive surface of the photoelectric conversion element and an on-axis principal ray.